ABSTRACT

There are provided an organic semiconductor structure comprising an organic semiconductor layer, which is large in size and homogeneous and has high charge transfer characteristics, a process for producing the same, and an organic semiconductor device. The organic semiconductor structure has, in at least a part thereof, an organic semiconductor layer comprising an aligned liquid crystalline organic semiconductor material. The liquid crystalline organic semiconductor material comprises an organic compound having a core comprising L 6 π electron rings, M 8 π electron rings, N 10 π electron rings, O 12 π electron rings, P 14 π electron rings, Q 16 π electron rings, R 18 π electron rings, S 20 π electron rings, T 22 π electron rings, U 24 π electron rings, and V 26 π electron rings, wherein L, M, N, O, P, Q, R, S, T, U, and V are each an integer of 0 (zero) to 6 and L + M + N + O + P + Q + R + S + T + U + V = 1 to 6. The liquid crystalline organic semiconductor material exhibits at least one liquid crystal state at a temperature below the heat decomposition temperature thereof.